

National Aeronautics and Space Administration



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Space Telescopes Reveal Secrets of Turbulent Black Hole

A fleet of spacecraft including NASA's *Hubble Space Telescope* has uncovered unprecedented details in the surroundings of a supermassive black hole. Observations reveal huge bullets of gas being driven away from the gravitational monster and a corona of very hot gas hovering above the disk of matter that is falling into the black hole.

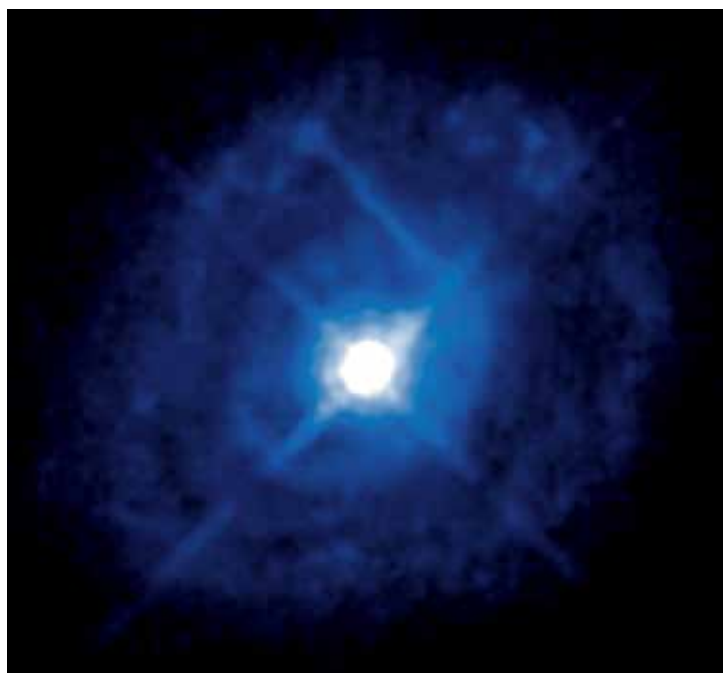
A team led by Jelle Kaastra of SRON Netherlands Institute for Space Research made use of data from the European Space Agency's XMM-Newton and INTEGRAL spacecraft (which study X-rays and gamma rays, respectively), the *Hubble Space Telescope* (for ultraviolet observations with the COS instrument), and NASA's *Chandra* (X-ray) *Observatory* and *Swift* (gamma-ray) satellites.

The black hole that the team chose to study lies at the heart of the galaxy Markarian 509 (Mrk 509), nearly 500 million light-years away. This black hole is colossal, containing 300 million times the mass of the Sun, and is growing more massive every day as it continues to feed on surrounding matter, which glows brightly as it forms a rotating disk around the black hole. Mrk 509 was chosen because it is known to vary in brightness, which indicates that the flow of matter is turbulent.

The image of Mrk 509 was taken in April 2007 with *Hubble's* Wide Field Planetary Camera 2. But using a large number of telescopes that are sensitive to different wavelengths of light gave astronomers unprecedented coverage running from the infrared, through the visible, ultraviolet, X-rays, and into the gamma-ray band.

The study is presented in a series of seven papers in the journal *Astronomy and Astrophysics*, with more expected to be published in coming months.

A full account of the research can be read on the SRON website at <http://www.sron.nl>.



Caption: This image of the distant active galaxy Markarian 509 was taken in April 2007 with the Hubble Space Telescope's Wide Field Camera 2.

Image credit: NASA, ESA, G. Kriss (STScI), and J. de Paat (SRON Netherlands Institute for Space Research)

GoddardView

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On the cover: The first six flight ready James Webb Space Telescope's primary mirror segments are prepped to begin final cryogenic testing at Marshall Space Flight Center.

Photo credit: NASA/Goddard/Chris Gunn

GoddardView Info

Goddard View is an official publication of the Goddard Space Flight Center. It is published bi-weekly by the Office of Communications in the interest of Goddard employees, contractors, and retirees. A PDF version is available online at: <http://www.nasa.gov/centers/goddard/home/index.html>.

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Deadlines: News items for publication in the Goddard View must be received by noon of the 1st and 3rd Thursday of the month. You may submit contributions to the editor via e-mail at john.m.putman@nasa.gov. Ideas for new stories are welcome but will be published as space allows. All submissions are subject to editing.

Bill Nye “The Science Guy” Visits Goddard

By Becky Marks

Like any other 20-something-year-old science “geek,” I grew up a huge Bill Nye fan. Many people might not know that “The Science Guy” is not only a champion of elementary science education but is also the executive director of the Planetary Society, as well as an avid Earth science enthusiast. As part of his position as a member of the space science community, he participates in outreach and is always interested in staying involved. Earlier this month, he came to Goddard to tour our facilities and meet with some of our scientists. As a fan, I jumped at the chance to accompany him on his tour.

We met in the Goddard Visitor Center where Goddard Chief Scientist Jim Garvin gave us an overview of Goddard and our missions. While the planned topics of discussion included climate change and Goddard's satellite programs, Nye treated us to tales about his father's time as a prisoner of war on Wake Island and a lively discussion on the future of the space program.

Using the Visitors Center's *Science on a Sphere* projection system, Garvin gave a brief lesson on how NASA satellites track and measure changes in Earth's climate, including ice melts and black carbon flows. Nye was not shy about jumping in to ask questions, make comments or sometimes carry on a tangential discussion. We could only move on with the tour after assuring Nye that Garvin would be joining us for lunch.

Next, we headed over to Astrobiology Analytical Laboratory in Building 34. Nye jumped at the chance to get an overview of the OSIRIS-REx mission from Lab Chief Jason Dworkin. Michael Callahan, Research Physical Scientist, and University of Pennsylvania graduate student Karen Smith showed us the ultra-high resolution mass spectrometer lab and Astrochemist Aaron Burton talked to us about liquid chromatography. Finally, Astrochemist Jamie Elsila and Research Space Scientist Jennifer Stern taught us how Goddard scientists can determine whether a compound is extra-terrestrial using stable isotopes.

After the astrobiology lab, we headed over to Building 29 to meet the *James Webb Space Telescope* (JWST) team. While we looked down into the clean room, Project Manager Bill Ochs, Deputy Project Manager Paul Geithner, Deputy Senior Project Scientist Jon Gardner, and Research Astrophysicist Amber Straughn gave us an update on how the program is progressing and answered Nye's numerous questions.

As Executive Director of the Planetary Society, Nye has a vested interest in the future of the space telescope program. The telescope, now 75 percent complete, will be able peer back much further than Hubble and, to quote Nye, “may make discoveries about the expanding universe.” Nye also acknowledged that it is difficult to explain the potential of JWST to Congress because an observatory like the James Webb has never existed, and it is impossible to know what it will discover until it is flown.

Lunchtime conversation ranged from last month's surprising earthquake to climate change. What was most striking about Nye was how many topics he could discuss at the drop of a hat—a true “Science Guy.”

After lunch, we went to see the Hyperwall presented by Horace Mitchell from the Scientific Visualization Studio and Landsat's Jeff Masek. Horace and Jeff demonstrated some of the ultra-high resolution climate models and Landsat visualizations of the Pacific Northwest.

Our last, and most eventful, stop of the day was in the Building 7 test facility. Walking into a scientific testing facility with Bill Nye the Science Guy was like walking into a guitar store with Jimi Hendrix—the team here at Goddard went wild. Enthusiasm reigned supreme as our scientists showed Nye what they were working on while Nye asked questions, took pictures, and even filmed a few short clips with his portable digital video camera. We saw the vibration and acoustic testing chambers, the centrifuge, and even donned “bunny suits” for a quick tour of the Space Environment Simulator.

The day was long and rainy, but Bill's fervor for science and space exploration was infectious. His tour lasted the whole day and would have easily gone longer if we had told him about the Hubble Command Center in Building 3. It was great to see a well-known and respected member of the science community truly enjoy all the work we do here at Goddard. ■



Photo credit: NASA Goddard/Bill Hrybik

Caption: Bill Nye with the JWST project. From left: Lynn Chandler, Jonathan Gardner, Amber Straughn, Bill Nye, Bill Ochs, and Paul Geithner.

Webb Telescope Completes Mirror-Coating Milestone

By Trent J. Perrotto and Lynn Chandler

NASA's *James Webb Space Telescope* has reached a major milestone in its development. The mirrors that will fly aboard the telescope have completed the coating process at Quantum Coating Inc. in Moorestown, N.J.

The telescope's mirrors have been coated with a microscopically thin layer of gold, selected for its ability to properly reflect infrared light from the mirrors into the observatory's science instruments. The coating allows the *Webb Telescope's* "infrared eyes" to observe extremely faint objects in infrared light. *Webb's* mission is to observe the most distant objects in the universe.



Caption: Engineers and technicians guide six James Webb Space Telescope mirror segments off the rails at Marshall Space Flight Center.

"Finishing all mirror coatings on schedule is another major success story for the *Webb Telescope* mirrors," said Lee Feinberg, NASA Optical Telescope Element manager for the *Webb Telescope* at Goddard. "These coatings easily meet their specifications, ensuring even more scientific discovery potential for the *Webb Telescope*."

The *Webb Telescope* has 21 mirrors, with 18 mirror segments working together as one large 21.3-foot (6.5-meter) primary mirror. The mirror segments are made of beryllium, which was selected for its stiffness, light weight and stability at cryogenic temperatures. Bare beryllium is not very reflective of near-infrared light, so each mirror is coated with about 0.12 ounce of gold. The last full size (4.9-foot /1.5-meter) hexagonal beryllium primary mirror segment that will fly aboard the observatory recently was coated, completing this stage of mirror production.

Mirror manufacturing began eight years ago with blanks made out of beryllium, an extremely hard metal that holds its shape in the extreme cold of space where the telescope will orbit. Mirror coating began in June 2010. Several of the smaller mirrors in the telescope, the tertiary mirror and the fine steering mirror, were coated in 2010. The secondary mirror was finished earlier this year.

Quantum Coating Inc. (QCI) is under contract to Ball Aerospace and Northrop Grumman. QCI constructed a new coating facility and clean room to coat the large mirror segments. QCI developed the gold coating for performance in certain areas, such as uniformity, cryogenic cycling, durability, stress and reflectance, in a two-year effort prior to coating the first flight mirror.

In the process, gold is heated to its liquid point, more than 2,500 Fahrenheit (1,371 degrees Celsius), and evaporates onto the mirror's optical surface. The coatings are 120 nanometers, a thickness of about a millionth of an inch or 200 times thinner than a human hair.

"We faced many technical challenges on the *Webb* mirror coating program," said Ian Stevenson, Director Of Coating at Quantum Coating. "One of the most daunting was that all flight hardware runs had to be executed without a single failure."

The mirror segments recently were shipped to Ball Aerospace in Boulder, Colo., where actuators are attached that help move the mirror. From there, the segments travel to the X-ray and Calibration Facility at Marshall Space Flight Center, to undergo a final test when they will be chilled to -400 Fahrenheit (-240 degrees Celsius). The last batch of six flight mirrors should complete the test by the end of this year.

The *Webb Telescope* is the world's next-generation space observatory and successor to the *Hubble Space Telescope*. The most powerful space telescope ever built, the *Webb Telescope* will provide images of the first galaxies ever formed, and explore planets around distant stars. It is a joint project of NASA, the European Space Agency, and the Canadian Space Agency. ■

Photo credit: NASA/Emmett Given

New IV&V Software Laboratory Named in Honor of Former Astronaut Jon A. McBride

By Kathleen M. Millson

NASA's Independent Verification and Validation Program (IV&V) in Fairmont, W.Va. dedicated and named its new software laboratory the Jon McBride Software Testing and Research lab, or JSTAR, in a ceremony to honor retired NASA astronaut and West Virginia native Capt. Jon A. McBride (USN) on Friday, September 23, 2011.

The new facility provides an environment for adaptable software testing and simulation and is designed to enhance tools and methods used to critically assess mission and safety critical software across NASA missions. It also supports end-to-end testing and simulation capabilities on flight software to reduce the threat of software-related failure.

McBride said, "Having been directly involved with the NASA space program for more than thirty years, it was indeed a privilege and an honor to have witnessed and participated in the opening ceremony of the JSTAR laboratory at the NASA Independent Verification and Validation Program. I am particularly honored in that the "J" in JSTAR symbolizes Jon McBride, a fortunate West Virginia "Mountaineer" who had the distinct pleasure of flying into outer space aboard Space Shuttle *Challenger*.

"JSTAR is a very unique facility that has the potential of revolutionizing the manner in which we validate the software that will be used to explore the depths of space in the coming years. I am overwhelmed that my friends and colleagues have attached my name to such a prestigious workplace and work force. I look forward to working with and for JSTAR as we move forward in our quest for more knowledge of our planet, our solar system, and our universe."



Photo credit: NASA/IV&V/ Jess White and Bailey Morris

Caption: NASA IV&V Project Manager and software engineer Frank Huy provides insight about the use of the Planetary Surface Simulator, which can be seen in the background, during the event's tours of the IV&V facility.

The lab is currently working with missions at Goddard, Wallops Flight Facility, Johnson Space Center, and the Jet Propulsion Laboratory. Expectations are that the lab will extend its services in the future to all other NASA Centers.

Greg Blaney, Director of the IV&V Program said, "We are proud to have this opportunity to honor Captain McBride's accomplishments and his service to NASA. Captain McBride exemplifies the best of NASA and the best of West Virginia by dedicating himself to the safety and success of NASA's missions and to the success of an amazing number of education and outreach programs in the state and across the country. I believe as he does that among the software engineers, educators, and students that will take advantage of all the JSTAR lab has to offer, we will find the next astronauts and exploration mission specialists to reach the stars and beyond from West Virginia."

For more information about IV&V, visit: <http://www.nasa.gov/ivv>.

For NASA biographical information on Jon A. McBride, visit: <http://www.jsc.nasa.gov/Bios/htmlbios/mcbride-ja.html>. ■



Photo credit: NASA/IV&V/ Jess White and Bailey Morris

Caption: Former NASA astronaut and West Virginia native, Capt. Jon A. McBride (USN), speaks to employees and guests at the dedication of IV&V's new software laboratory.

A Champion for Space Science

By David S. Schuman

David Schuman is a lawyer at NASA's Goddard Space Flight Center where he has served for many years as counsel to the James Webb Space Telescope project. Among his mentors was Paul Dembling, author of the Space Act and General Counsel for NASA Administrator James Webb.

The highest priority program, an intellectual effort requiring brilliant technology, highly organized mobilization of resources, and unflagging pursuit of long range goals—all with uncertainty over schedules, few demonstrable spectaculars along the way, and strong pressure to cut the budget during wartime. Add to this uncertainty between presidential administrations and passionate support from the Agency. While these attributes might very well describe the current environment for the *James Webb Space Telescope* project, they were first debated between a president and one of the greatest political champions for space science, NASA's second Administrator and the man for whom the next space telescope is named, James Webb.



Caption: President Kennedy shakes hands with NASA Administrator James Webb during a meeting in the Oval Office January 30, 1961.

The discussions concerned the *Apollo* Moon program. They took place beginning in 1961 and ended just several days before Kennedy was assassinated in November 1963. The president was John F. Kennedy and America was in a race to the Moon with the Soviets. Publicly, the president was forceful and unwavering in his support for the space program. Behind the scenes, facing many competing interests and political challenges, he was more uncertain and deliberate.

It was largely the previously unreported White House discussions between NASA Administrator James Webb and the president that carried the day and that led Kennedy to utter some of the most eloquent and convincing statements in support of the space program ever made. Those behind the scenes debates created a climate of support that allowed the United States to land a man on the Moon within a decade.

In a speech to a special joint session of Congress on May 12, 1961, President Kennedy recognized the importance of the country's efforts in space:

"Whatever the actual scientific or military value of a spectacular undertaking in space, its success enhances the prestige of the nation which scores it, and is interpreted by others as a major indication of superiority. Nor is this a wholly mistaken interpretation. Success in large scale space projects requires a highly organized mobilization of resources, brilliant technology, and unflagging pursuit of long-range goals."

In a Cabinet Room discussion in November 1962, President Kennedy urged Webb to make the Moon program the top priority because, "otherwise we're not spending that much, I'm not that in to space. It's good but fantastically expensive. It would smash our budget. We started behind but we passed 'em."

By September 1963, in a White House meeting, President Kennedy had come around saying, "I think this can be an asset, this program. I think in time, it's like a lot of things, this is mid-journey and therefore everybody says 'what the hell are we making this trip for' but at the end of the thing they may be glad we made it."

Webb responded:

"While you're President, this is going to come true in this country. So you're going to have both science and technology appreciating your leadership in this field. The high school seniors and the college freshman are 100% for man looking at three times what he's never looked at before. He's looking at the material of the Earth, the characteristics of gravity and magnetism and he's looked at life on earth. And he understands the universe just looking at those three things. Alright, maybe he's gonna have, material from the Moon and Mars; he's going to have already a measurement from Venus about its gravity and its magnetic fields. And if we find some life out beyond Earth, these are going to be staggering things in terms of the development of the human intellect. And I predict you are not going to be sorry, no Sir, that you did this."

Webb continued:

"I think we're in good shape in every way except in the political front, which is partly exacerbated by the desire to cut the budget and the problem with the military. I think we've got a good program you're going to be proud of and I think it's going to generate the technology that is going to make a great difference in the future of this country, far beyond space."

Photo credit: John F. Kennedy Presidential Library and Museum/Abbie Rowe

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A Champion for Space Science

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Webb was a pragmatist and a realist responding to President Kennedy's inquiry about timing, that while NASA might do a fly-around the Moon during a potential second term, it was unlikely to land during his administration. "This is a tough job, a real tough job. But I will tell you what will be accomplished while we're president and it will be one of the most important things that's been done in this Nation. A basic need to use technology for total national power. That's going to come out of this space program more than any single thing."

Webb noted the next two years were a critical period but worth it. "We can do this job within the \$28 billion, plus the \$15, in this ten year period, but we have to have enough level of support in '64 and '65 to get over the hump and then the expenditures will drop." President Kennedy inquired what would happen if Congress cut the budget the following two years. Webb responded by emphasizing the importance of presidential support, "We'd have a fighting chance [to get to the Moon]. I'm trying to get this clearly in your mind, because you have to say something about this." Webb argued, "it will be one of the most important things that's been done in this Nation" to "develop in this country an intellectual effort of the highest order of magnitude."

Take almost any of these debates and run the clock forward nearly fifty years. Our country is burdened with many of the same afflictions which plagued it then—far flung conflicts, uncertainty over schedules, and tremendous pressure on the budget. Yet NASA's pre-eminent science program, the highest priority of the National Academy of Sciences Decadal Survey, remains a living testament to one of the Agency's greatest champions for space science, James Webb. When the telescope begins operation and perhaps discovers in extra-solar orbit, a small Earthlike planet in the habitable zone, the nation could be one step closer to finding some life out beyond Earth—in Webb's word's, a "staggering thing" for the human intellect.



Caption: President Kennedy at Rice University in Houston, Texas on September 12, 1962 speaking on the Nation's space effort.

September 12, 2011, marks the 49th anniversary to the day of President Kennedy's speech at Rice University in Houston, Texas, where he emphasized the importance of doing difficult things in space:

"We choose to go to the Moon. We choose to go to the Moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win."

Based on the unflagging support from NASA's Administrator, President Kennedy made his final remarks on the space program on November 21, 1963, the day before he was assassinated, in Dallas, Texas. His speech, at the dedication of the Aerospace Medical Health Center in San Antonio, was his final official act as President. The President said:

"Frank O'Connor, the Irish writer, tells in one of his books how, as a boy, he and his friends would make their way across the countryside, and when they came to an orchard wall that seemed too high to climb, too doubtful to try, too difficult to permit their journey to continue, they took off their caps and tossed them over the wall—and they had no choice but to follow them.

This Nation has tossed its cap over the wall of space—and we have no choice but to follow it. Whatever the difficulties, they must be overcome. Whatever the hazards, they must be guarded against. With the vital help of this Aerospace Medical Center, with the help of all who labor in this space endeavor, with the help and support of all Americans, we will climb this wall with both safety and speed—and we shall then explore all the wonders and treasures that lie on the other side."

As NASA completes the James Webb Space Telescope project, a scientific and technological challenge of the highest magnitude, amidst all the pressures of this day and age, this country and the world are richer for it. Once again, we've tossed our cap over the wall. And again we have to follow. ■

All quotations are based on tape recorded discussions and written background materials provided by the John F. Kennedy Library. Any errors or omissions are solely the responsibility of the author.

Climbing Ever Higher

By Elizabeth M. Jarrell and John M. Putman

On September 21, an Exploring Leadership Colloquium with Jamie Clarke's "Above All Else: The Everest Dream" was presented that featured leadership lessons learned from his second summit of Mt. Everest.



Photo credit: NASA/Goddard/Bert Pasquale



Photo credit: NASA/Goddard/Bert Pasquale

*The Other Side of Fear
is Freedom.*

*Simple, elegant solutions
consistently executed create
magical outcomes.*

In 1997, after two previous attempts to reach its peak, Canadian adventurer Jamie Clarke summited Mt. Everest, but this was only the beginning of his journeys. In 1999, he successfully crossed the Arabian Desert, the most dangerous in the world, becoming the first Westerner to do so in 50 years. He has explored over 40 countries and is the author of two books, *Everest to Arabia* and *The Power of Passion*. In 2008, Jamie Clarke climbed the Carstensz Pyramid in Indonesia, completing his epic quest to reach the Seven Summits, and, in 2010, he led Expedition Hanesbrand, reaching the summit of Everest for the second time. ■



Photo provided by Jamie Clarke

*Cultivate the Courage and
Passion to Keep Climbing.*



Photo credit: NASA/Goddard/Bert Pasquale

*Focus on the Rungs
of the Ladder.*



Photo provided by Jamie Clarke

Goddard Scientist Receives Lindsay Award for Titan Research

By Nancy Neal-Jones and Elizabeth Zubritsky

Dr. F. Michael Flasar, an expert on the atmosphere of Saturn's moon Titan, is the recipient of the 46th Annual John C. Lindsay Memorial Award, the highest honor given by Goddard in space science. The award was presented Sept. 30, 2011.

Much of Flasar's research has focused on the meteorology and global climate of Titan, the only moon in the solar system to have a planet-like atmosphere. He is the Principal Investigator for the infrared instrument on NASA's *Cassini* spacecraft that measures temperature. This instrument, called the Composite Infrared Spectrometer (CIRS), can provide a wealth of information about the surface, internal structure, and atmosphere of a planet or moon. He is also a member of the Cassini Radio Science team. That experiment measures the gravity of Saturn and its moons as well as the properties of Saturn's rings and Saturn's and Titan's atmospheres.

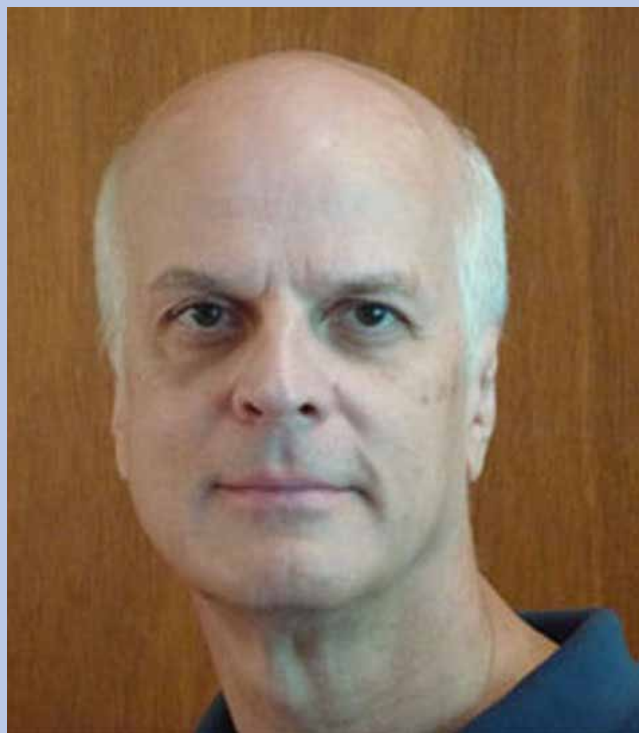


Photo provided by F. Michael Flasar

Caption: Dr. F. Michael Flasar.

"This award is a terrific recognition of Mike's lifetime contribution to our understanding of one of the most interesting satellites in the solar system," says Dr. Anne Kinney, Director of Goddard's Solar System Exploration Division.

Flasar was part of the team that discovered one of Titan's most puzzling features: most of the atmosphere rotates much faster, up to 20 times faster, than the moon itself. Venus is the only other place in the solar system where this type of behavior has been observed.

Flasar also predicted that Titan had a jet-stream-like wind pattern near its winter pole. This wind vortex whips around the pole, isolating the pocket of air at its center in much the same way that air currents on Earth set up the atmospheric conditions for the ozone holes to form. When *Cassini* arrived

at Saturn in 2004, Titan's north pole was in winter, and detailed measurements made by CIRS confirmed the existence of this wind pattern in the northern hemisphere.

"I am honored to receive this award, which acknowledges not only my own work but also the hard work of all of my collaborators over the years," says Flasar. "They have taught me a lot, and our common endeavor has been exciting and rewarding."

Flasar says his "30-year love affair with Titan" began with *Voyager 1*'s encounter with the moon in 1980. He was a Co-Investigator on the temperature instrument on *Voyager*, called the Infrared Radiometer Interferometer and Spectrometer, or IRIS. IRIS could penetrate into much of Titan's thick atmosphere, allowing the scientists to begin to study the composition and temperatures of the atmosphere in its many layers.

Later, Flasar was the Co-Investigator, and then Principal Investigator, for *Cassini*'s CIRS instrument. Among the discoveries made by CIRS was the unexpected finding of localized hot regions near the south pole of Saturn's moon Enceladus, which could only be explained by a significant flow of heat from its interior.

Flasar continues to analyze Titan's wind patterns and predicts that by the time winter comes to Titan's southern hemisphere in 2017, the wind vortex in the northern hemisphere will have shifted to the southern hemisphere. "We expect to find a complete reversal at that point," says Flasar. "The big question is: will the northern vortex go out with a bang or a whimper? On Earth, the polar vortex is disrupted dramatically in late spring, through the collision of polar and tropical air masses. But on Titan, it's not clear. Perhaps the vortex will gradually fizzle out like the smile of the Cheshire cat."

The John C. Lindsay Award in Space Science is named in honor of Dr. John C. Lindsay, a pioneer in the exploration of the Sun by both satellite- and rocket-borne experiments. The award commemorates the launch on March 7, 1962, of the first *Orbiting Solar Observatory*, which was built by Lindsay and others.

The Lindsay Award is presented each year to the Goddard employee who best exhibits the qualities of broad scientific accomplishments in space science.

The *Cassini-Huygens* mission is a cooperative project of NASA, the European Space Agency, and the Italian Space Agency. NASA's Jet Propulsion Laboratory manages the mission for NASA's Science Mission Directorate, Washington, D.C. The *Cassini* orbiter was designed, developed, and assembled at JPL. The CIRS team is based at Goddard, where the instrument was built.

For more information about CIRS, visit: <http://cirs.gsfc.nasa.gov>. ■

Goddard at the 2011 National Air and Space Museum Event

Pictures by Bill Hrybyk and Pat Izzo

The Maryland Space Business Roundtable sponsored their 12th annual event at the National Air and Space Museum on September 14, 2011. The event is held in support of the Roundtable's programs in education for students in science, technology, engineering and math. This year's event—Earth and Space: A Journey of Wonder & Discovery, with remarks from Goddard Center Director Rob Strain and NASA Administrator Charlie Bolden—including a program featuring a 5-panel member of scientists: Dr. Waleed Abdalati, NASA Chief Scientist; Dr. Arthur Hou, GPM Mission Scientist; Dr. Jim Garvin, Goddard Chief Scientist; Dr. Holly Gilbert, Goddard Solar Physics Laboratory Chief; and Dr. Amber Straughn, Research Astrophysicist. Miles O'Brien, space and science broadcast news veteran, moderated the panel. ■



New Employee Spotlight

By John Putman. Photos by Debora McCallum

The Office of Human Capital Management (OHCM) invites you to visit the New Employee Spotlight Web site. On the site, we acknowledge our newest civil servant employees and highlight pertinent information that will help you to get to know them. Please welcome them to our Goddard family.

Below are some of Goddard's new additions. The Web site will be updated every two weeks as Goddard takes on new hires. Watch Dateline and InsideGoddard for announcements. See more new members of the Goddard community at: <https://internal.gsfc.nasa.gov/web/community/nas>. ■



Theresa (Terri) Brandt, Research Astrophysicist, Code 661

What will you be doing?

Using the *Fermi Gamma-Ray Space Telescope* and direct-detection balloon experiments to better understand cosmic rays.

What did you do before you came to Goddard?

I had a Post-Doc in Toulouse, France using the *Fermi Gamma-Ray Space Telescope* to search for the origin of cosmic rays.

Hobbies/Interests:

Climbing mountains, traveling, and ultimate frisbee.



Alden Jurling, Co-op, Code 551

What will you be doing?

Image-based wavefront sensing, phase retrieval.

What did you do before you came to Goddard?

Ph.D. research at University of Rochester (New York) on image based wavefront sensing (funded by Goddard).

Hobbies/Interests:

Science Fiction, video games, and books.

Why did you want to work for NASA Goddard?

As a Co-op, I am interested in the opportunity to work closely with my colleagues at Goddard and to become more familiar with NASA missions and requirements. When I return to the University of Rochester to finish my Ph.D. research, I will be able to direct my efforts to better support our sponsors.

Additional Information?

Family, education, etc. I earned my undergraduate degree in physics from Oregon State University in Corvallis. My wife, Jenny, is an editor.

OutsideGoddard: Calvin Williams

By Elizabeth M. Jarrell

In 2003, Calvin Williams, a project support specialist for the *Geostationary Operational Environmental Satellite-R* (GOES-R) weather satellite, was watching the devastation of Tropical Storm Bonnie on television. He says, "I felt that there was something I could do to help because watching TV was not helping." So Williams called the Red Cross and volunteered to assist with disaster relief.

After an interview, he was initially trained to drive the Emergency Response Vehicle (ERV) which carries supplies for shelters and food for mass feedings. It is the same size and build as an ambulance but also has sliding windows on the sides to help with distribution. He has since received training in CPR, first aid, mass feeding, and shelter setups. Williams is returning to his Boy Scout glory days. "It's a good feeling," he says.

Williams initially helped with local disasters such as apartment fires. He explains, "You never stop helping with local disasters, but you also work your way up to helping with major disasters." He is on call one week a month and that week varies. His travel bag remains packed at all times, including a snake bite kit. "You cannot put a price on what we do," he says.



Caption: Calvin Williams (far left) with some fellow Red Cross volunteers in Alabama.

"I'll never forget Katrina, my first major disaster, which was in late August 2005," he says. He deployed to New Orleans with one day's notice, arrived three days after Katrina, and was there for almost three weeks. Even his 23 years as a mortician did not prepare him for the task at hand. In explaining his first impressions, he says, "I still get chills. I've never seen anything quite like that. The 28 foot waves came in and when they went out they left behind unbelievable devastation. It was 105 degrees and you could smell the dead fish, crabs, and shrimp that washed in from the ocean. It was a life-changing event for us volunteers. It was so bad that it permeated your clothing and even your skin. We wore face masks with Vicks vapor rub to cover the stench." We slept in trucks, under trucks, and eventually in a hanger at a military base. "We had no air conditioning and there were about 1,000 of us in that hanger," recalls Williams. Church organizations took turns feeding the volunteers.

In recalling one night while he was assisting at a shelter, he says, "Victims were sitting around talking about what they missed and who they could not find." It is talk like this that makes it impossible for Williams to sit idle.

"I drove the ERV through the devastated neighborhoods looking for people," recalls Williams. "Many people would not leave because they thought their life possessions would be stolen. Others refused to leave their pets. We returned later with medical supplies, food, water, and blankets for these people." He was overwhelmed by their appreciation. Says Williams, "The thing that really rips your heart out is that the people were just so grateful to see us. Many said that they didn't expect anyone would come. Their eyes lit up when they received a simple bottle of water."



Caption: Some of the devastation in Tuscaloosa, Alabama.

He notes that another reward is that once the Red Cross comes to someone's aid, they then try to help each other and many become volunteers themselves. Someday Williams hopes to return to New Orleans to hear the laughter and the music—but not during hurricane season.

Williams has assisted with one major disaster every year since Katrina. In March of 2011, he spent three weeks in Tuscaloosa, Snead, and Birmingham, Alabama after the Nation suffered through 235 unpredicted tornadoes in one weekend. Remembers Williams, "The wind peeled bark off the trees like a banana and wrapped steel beams around tree trucks like you would tie a bow. It was crazy. Tuscaloosa looked like someone had dropped two boxes of toothpicks; that was all that was left."

"I have learned to respect the power of nature" Williams says. "What you see on TV is sugarcoated and not like anything you would see in person. I have seen nature at war." He remains mindful of his mother's advice, which motivates him to continue volunteering: "Son, things could always be worse than what they are now and they are not as bad as they could be. Think about how good things can be." His wish is only this: "It would be great if someone read this story and called up the Red Cross to volunteer."



Photo provided by Calvin Williams

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